

## CLAIMS:

1. A surface covering, wall covering, flooring, carpet, or carpet tile, comprising a low face weight primary carpet and a cushion layer.

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2. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the low face weight is less than or equal to about 15 oz/yd<sup>2</sup>.

3. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, further comprising an adhesive layer between said primary carpet and said cushion layer.

4. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 3, wherein the adhesive layer is less than or equal to about 50 oz/yd<sup>2</sup>.

5. The surface covering, wall covering, flooring, carpet or carpet tile as recited in claim 4, wherein the adhesive layer is about 36 – 50 oz/yd<sup>2</sup>.

6. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 3, further comprising a reinforcing material.

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7. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion layer is about 0.04 – 0.12 inches thick.

8. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 7, wherein said cushion layer is about 0.04 – 0.09 inches thick.

9. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion layer has a polymer weight of less than about 15 oz/yd<sup>2</sup>.

10. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 9, wherein said cushion layer has a polymer weight of about 4.32 – 12.96 oz/yd<sup>2</sup>.

11. The surface covering, wall covering, flooring, carpet or carpet tile as recited in claim 10, wherein said cushion layer includes a polyurethane foam having about 110 parts of filler by weight.

12. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion layer has a polymer weight of about 2.72 – 8.24 oz/yd<sup>2</sup>.

13. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 12, wherein said cushion layer includes a polyurethane foam with about 190 parts of filler by weight.

14. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion is an unfilled polyurethane.

15. The surface covering, wall covering, flooring, carpet, and carpet tile as recited in claim 14, wherein said cushion layer has a density of about 6 lbs./per cubic foot and a polymer weight of about 2.88 – 8.64 oz/yd<sup>2</sup>.

5 16. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion layer includes a lightweight cushion having a density of about 6 – 9 lb./cu. ft.

10 17. The surface covering, wall covering, flooring, carpet, or carpet tile as restricted in claim 16, wherein said lightweight cushion is a polyurethane system with about 15 parts of filler material by weight and a polymer weight of about 4.30 – 13.02 oz/yd<sup>2</sup>.

15 18. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein said cushion layer includes at least one of a polyurethane foam and a water based foam system.

19. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the cushion layer includes a lightweight cushion having a density of 16 lbs. per cubic foot.

20 20. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, having resilience and under foot comfort.

21. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, exhibiting performance characteristics that rate it for heavy commercial use.
22. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1,  
5 further comprising a reinforcing material embedded in said cushion layer.
23. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 22, wherein said cushion layer is about 0.04 – 0.12 inches thick.
- 10 24. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the low face weight carpet is at least one of tufted and bonded.
25. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1,  
15 wherein the low face weight carpet is aesthetically pleasing.
26. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the low face weight carpet is made from yarns of 1000 – 1700 denier.
27. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1,  
20 wherein the cushion layer includes a foam layer of 14 – 18 lbs. per cubic foot density.
28. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1, wherein the low face weight carpet is made using a non-heatset single yarn.

29. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 28, wherein the single yarn has a denier of about 1000-1400.

30. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 29,  
5 wherein the low face weight carpet has a non-woven backing and a latex coating.

31. The surface covering, wall covering, flooring, carpet, or carpet tile as recited in claim 1,  
10 wherein said low face weight carpet has a face weight of less than 20 oz/yd<sup>2</sup> and is jet dyed.

32. A low weight cushion backed carpet tile, comprising a low face weight primary carpet  
15 and a light weight cushion backing.

33. The carpet tile as recited in claim 32, wherein the low face weight is less than or equal to  
20 about 15 oz/yd<sup>2</sup>.

34. The carpet tile as recited in claim 32, further comprising an adhesive layer between said  
carpet and cushion backing.

35. The carpet tile as recited in claim 34, wherein the adhesive layer is about 36 – 50 oz/yd<sup>2</sup>.

36. The carpet tile as recited in claim 32, having resilience and under foot comfort.

37. The carpet tile as recited in claim 32, exhibiting performance characteristics that rate it for a heavy commercial use.

38. The carpet tile as recited in claim 34, further comprising a reinforcing material in or between at least one of said primary carpet, adhesive layer, and lightweight cushion.

39. The carpet tile as recited in claim 32, wherein the lightweight cushion is about 0.04 – 0.12 inches thick.

40. The carpet tile as recited in claim 32, wherein said lightweight cushion is about 0.04 – 0.09 inches thick.

41. The carpet tile as recited in claim 32, wherein the lightweight cushion has a polymer weight of less than about 15 oz/yd<sup>2</sup>.

42. The carpet tile as recited in claim 32, wherein said lightweight cushion has a polymer weight of about 4.32 – 12.96 oz/yd<sup>2</sup>.

43. The carpet tile as recited in claim 32, wherein said lightweight cushion is a polyurethane foam having about 110 parts of filler by weight.

44. The carpet tile as recited in claim 32, wherein the lightweight cushion has a polymer weight of about 2.72 – 8.24 oz/yd<sup>2</sup>.

45. The carpet tile as recited in claim 32, wherein said lightweight cushion is a polyurethane foam with about 190 parts of filler by weight.

46. The carpet tile as recited in claim 32, wherein the lightweight cushion is an unfilled polyurethane.

47. The carpet tile as recited in claim 32, wherein said lightweight cushion has a density of about 6 lbs./per cubic foot and a polymer weight of about 2.88 – 8.64 oz/yd<sup>2</sup>.

48. The carpet tile as recited in claim 32, wherein the lightweight cushion has a density of about 6 – 9 lb./cu. ft.

49. The carpet tile as restricted in claim 32, wherein said lightweight cushion is a polyurethane system with about 15 parts of filler material by weight and a polymer weight of about 4.30 – 13.02 oz/yd<sup>2</sup>.

50. The carpet tile as recited in claim 32, wherein said lightweight cushion is at least one of a polyurethane foam and a water based foam system.

51. The carpet tile as recited in claim 32, wherein the lightweight cushion has a density of about 16 lbs. per cubic foot.

52. The carpet tile as recited in claim 32, wherein the low face weight carpet is at least one of tufted and bonded.

53. The carpet tile as recited in claim 32, wherein the low face weight carpet is aesthetically pleasing.

54. The carpet tile as recited in claim 32, wherein the low face weight carpet is made from a yarn with a denier of about 1000 - 1700.

55. The carpet tile as recited in claim 32, wherein the low weight cushion has a density of about 14 – 18 lbs. per cubic foot.

56. The carpet tile as recited in claim 32, wherein the low face weight carpet is made using a non-heatset single yarn.

57. The carpet tile as recited in claim 56, wherein the single yarn has a denier of about 1000-1400.

58. The carpet tile as recited in claim 32, wherein the low face weight carpet has a non-woven backing and a latex coating.

59. The carpet tile as recited in claim 32, wherein said low face weight carpet has a face weight of less than 20 oz/yd<sup>2</sup> and is jet dyed.



60. A low weight cushion backed carpet composite comprising a low weight primary carpet and a thin cushion backing.

5 61. The carpet composite as recited in claim 60, wherein the low weight carpet has a face weight of less than or equal to about 15 oz/yd<sup>2</sup>.

62. The carpet composite as recited in claim 60, wherein the thin cushion backing is about 0.04 – 0.12 inches thick.

10 63. The carpet composite as recited in claim 60, wherein said thin cushion is about 0.04 – 0.09 inches thick.

15 64. The carpet composite as recited in claim 60, wherein the thin cushion has a polymer weight of less than about 15 oz/yd<sup>2</sup>.

65. The carpet composite as recited in claim 60, wherein said thin cushion has a polymer weight of about 4.32 – 12.96 oz/yd<sup>2</sup>.

20 66. The carpet composite as recited in claim 60, wherein said thin cushion is a polyurethane foam having about 110 parts of filler by weight.

67. The carpet composite as recited in claim 60, wherein the thin cushion has a polymer weight of about 2.72 – 8.24 oz/yd<sup>2</sup>.

68. The carpet composite as recited in claim 60, wherein said thin cushion is a polyurethane foam with about 190 parts of filler by weight.

69. The carpet composite as recited in claim 60, wherein the thin cushion is an unfilled polyurethane.

70. The carpet composite as recited in claim 60, wherein said thin cushion has a density of about 6 lbs./per cubic foot and a polymer weight of about 2.88 – 8.64 oz/yd<sup>2</sup>.

71. The carpet composite as recited in claim 60, wherein the thin cushion has a density of about 6 – 9 lb./cu. ft.

72. The carpet composite as restricted in claim 60, wherein said thin cushion is a polyurethane system with about 15 parts of filler material by weight and a polymer weight of about 4.30 – 13.02 oz/yd<sup>2</sup>.

73. The carpet composite as recited in claim 60, wherein said thin cushion is at least one of a polyurethane foam and a water based foam system.

74. The carpet composite as recited in claim 60, wherein the thin cushion backing has a density of 16 lbs. per cubic foot.

75. The carpet composite as recited in claim 60, further comprising an adhesive layer between said primary carpet and said thin cushion backing.

76. The carpet composite as recited in claim 75, wherein the adhesive layer is less than or equal to about 50 oz/yd<sup>2</sup>.

77. The carpet composite as recited in claim 75, further comprising a reinforcement material in or between at least one of said carpet, adhesive layer, and thin cushion backing.

78. The carpet composite as recited in claim 60, exhibiting performance characteristics that rate it for a heavy commercial use.

79. The carpet composite as recited in claim 60, having resilience and under foot comfort.

80. The carpet composite as recited in claim 60, wherein said composite is adapted to be cut into at least one of carpet, carpet tiles, runners, area rugs, floor mats, and the like.

81. The carpet composite as recited in claim 75, exhibiting performance characteristics that rate it for a heavy commercial use and having resilience and under foot comfort.

82. The carpet composite as recited in claim 77, exhibiting performance characteristics that rate it for heavy commercial use and having resilience and underfoot comfort.

83. The carpet composite as recited in claim 60, wherein the low weight carpet is at least one  
5 of tufted and bonded.

84. The carpet composite as recited in claim 60, wherein the low weight carpet is aesthetically pleasing.

85. The carpet composite as recited in claim 60, wherein the low weight carpet is made from  
10 a yarn having a denier of about 1000 - 1700.

86. The carpet composite as recited in claim 60, wherein the low weight cushion has a  
density of about 14 – 18 lbs. per cubic foot.

87. The carpet composite as recited in claim 60, wherein the low weight carpet is made using  
15 a non-heatset single yarn.

88. The carpet composite as recited in claim 87, wherein the single yarn has a denier of about  
20 1000-1400.

89. The carpet composite as recited in claim 60, wherein the low weight carpet has a non-woven backing and a latex coating.

90. The carpet composite as recited in claim 60, wherein said low weight carpet has a face weight of less than 20 oz/yd<sup>2</sup> and is jet dyed.

91. A low weight cushion backed carpet tile, comprising a low weight primary carpet, a thin cushion backing and a hot melt layer between said primary carpet and thin cushion backing.

92. The carpet tile as recited in claim 91, wherein the carpet tile includes a reinforcement material in or between at least one of said primary carpet, hot melt layer, and thin cushion backing.

93. A low weight carpet tile, comprising a layered structure of a low weight primary carpet precursor, latex pre-coat adhesive, hot melt adhesive, fiberglass, polyurethane foam, and felt.

94. A low weight modular carpet tile, comprising a low face weight primary carpet, a hot melt layer including a reinforcing material, and a thin cushion layer having a non-woven backing.

95. A low weight modular carpet tile comprising a layered structure of a low face weight primary carpet, latex pre-coat adhesive, hot melt adhesive, fiberglass, polyurethane foam, and felt.

5 96. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, hot melt adhesive, polyurethane foam, and felt.

97. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, hot melt adhesive, fiberglass, and polyurethane foam.

10 98. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, hot melt adhesive, and polyurethane foam.

15 99. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, bitumen hot melt layer, fiberglass, polyurethane foam, and felt.

100. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, a first layer of hot melt adhesive, fiberglass, a second layer of hot melt adhesive, polyurethane foam, and felt.

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101. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet, a first layer of hot melt adhesive, a fiberglass, a second layer of hot melt adhesive,

polyurethane foam, and felt.

102. A low weight modular carpet tile comprising a layered structure of a low weight primary carpet precursor, fiberglass, latex pre-coat adhesive, hot melt adhesive, polyurethane foam, and felt.

103. A method of forming a low weight modular carpet tile comprising the steps of:  
adhesively bonding a layer of glass reinforcement material to the base of a low weight primary carpet fabric having a face weight of less than or equal to about 15 oz/yd<sup>2</sup> to form a laminate composite,

placing a layer of wet polyurethane-foam forming composition into direct contact relation with a layer of non-woven backing material to form a polyurethane foam layer of about 0.04 – 0.12 inches thick,

joining the polyurethane foam layer to the glass reinforcement material to form a low weight modular carpet composite, and cutting carpet tiles from the carpet composite.

104. The method as recited in claim 103, wherein said step of adhesively bonding the layer of glass reinforcement to the base of the primary carpet fabric utilizes a hot melt layer of about 36 – 50 oz/yd<sup>2</sup>.

105. A method of forming a low weight modular carpet composite comprising the steps of :

adhesively bonding a layer of glass reinforcement material to the base of a low weight primary carpet fabric to form a laminate composite, and placing a layer of wet polyurethane-forming composition into direct contacting relation with the glass reinforcement material in a manner providing a polyurethane foam layer of about 0.04 – 0.12 inches thick.

106. The method as recited in claim 105, wherein the adhesively bonding of the glass reinforcement material to the base of the primary carpet fabric forms a hot melt layer of about 36 – 50 oz/yd<sup>2</sup>.

107. A process for the formation of a floor carpet tile whereby the tile produced is suitable for disposition as discrete modular units across a flooring surface, the process comprising the steps of:

applying a layer of latex pre-coat adhesive to the back of a low weight primary carpet fabric,

applying a hot melt adhesive over the latex pre-coat,

forming a layer of polyurethane foam on at least one of a woven or non-woven backing material, and joining the polyurethane foam to the hot melt adhesive to form a low weight modular carpet composite, and



cutting carpet tiles from the carpet composite.

108. The method as recited in claim 107, wherein the low weight primary carpet has a face  
5 weight of less than or equal to about 15 oz/yd<sup>2</sup>, the polyurethane foam layer is about 0.04  
– 0.12 inches thick, and the hot melt layer is about 36 – 50 oz/yd<sup>2</sup>.

109. The method as recited in claim 107, further comprising the step of adding a  
10 reinforcement material between said hot melt adhesive and said polyurethane foam.

110. A low weight carpet tile produced by the process claim 103.

111. A low weight carpet composite produced by the process claim 105.

112. A floor carpet tile produced by the process of claim 107.

113. A floor carpet tile produced by the process of claim 109.

114. A surface covering such as wall covering, panel covering, flooring, floor covering,  
20 carpet, carpet tile, or the like comprising: a low face weight material and cushion back.

115. The covering as recited in claim 114, wherein the material has an upper and lower surface, and the cushion back is attached to the lower surface of said material.
116. The covering as recited in claim 114, wherein the covering is a floor covering.
117. The covering as recited in claim 114, wherein the cushion back is low weight.
118. The covering as recited in claim 114, wherein the material is a pile material.
119. The covering as recited in claim 114, wherein the low face weight is less than about 20 oz/yd<sup>2</sup>.
120. The covering as recited in claim 114, wherein the low face weight is less than or equal to about 15 oz/yd<sup>2</sup>.
121. The covering as recited in claim 114, wherein the low face weight is less than or equal to about 12 oz/yd<sup>2</sup>.
122. The covering as recited in claim 114, wherein the material has an upper surface having at least one of a design, color, pattern, and combinations thereof.
123. The covering as recited in claim 122, wherein the design, color, pattern, and combinations thereof are made by at least one of injection dying, jet dying, printing, and combinations thereof.

124. The covering as recited in claim 114, wherein the material is a tufted pile material made from a yarn having a twist of less than one.

5 125. The covering as recited in claim 114, wherein the material is a tufted pile material made from at least one of a natural and synthetic yarn.

126. The covering as recited in claim 114, wherein the material is at least a portion of a tufted pile broadloom material.

10 127. The covering as recited in claim 126 wherein the tufted pile broadloom material has an upper pile face having at least one of a design, color, pattern, and combinations thereof.

15 128. The covering as recited in claim 127 wherein the at least one design, color, pattern, and combinations thereof are made thereon by at least one of injection dying, jet dying, printing, and combinations thereof on broadloom.

129. The covering as recited in claim 114, wherein the covering has a Hexapod rating of at least 3.

20 130. The covering as recited in claim 114, wherein the covering has resilience and under foot comfort.

131. The covering as recited in claim 114, wherein the covering has a Gmax test result of less than 130.

5 132. The covering as recited in claim 114, wherein the covering has a resilience rating of greater than 25.

133. The covering as recited in claim 114, wherein the covering exhibits performance characteristics that rate it for heavy commercial use.

10 134. The covering as recited in claim 114, wherein the covering has an Appearance Retention Rating (ARR) of at least 3.5 long term and at least 4.0 short term.

15 135. The covering as recited in claim 114, wherein the covering has a Hexapod test color change test result of only slight or moderate color change.

136. The covering as recited in claim 114, wherein the covering has a Hexapod test pile height retention result of a pile height retention of at least about 74%.

20 137. The covering as recited in claim 114, wherein the covering has an intermediate layer between said material and said cushion back.

138. The covering as recited in claim 137, wherein the intermediate layer is a resilient layer made of hot melt and a fiberglass material.

139. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, and a cushion back.

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140. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a Hexapod rating of at least 3.

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141. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a resilience and under foot comfort.

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142. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a Gmax test result of less than 130.

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143. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a resilience rating of greater than 25.

144. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>,

a cushion back, and an Appearance Retention Rating (ARR) of at least 3.5 long term and at least 4.0 short term.

145. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a Hexapod test color change test result of only slight or moderate color change.

146. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and a Hexapod test pile height retention result of a pile height retention of at least about 74%.

147. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>, a cushion back, and an intermediate layer between said material and said cushion back.

148. The covering as recited in claim 147, wherein the intermediate layer is a resilient layer made of hot melt and a reinforcement material.

149. A surface covering such as flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight material having a face weight of less than about 20 oz/yd<sup>2</sup>,

a cushion back, and a reinforcing material in at least one of said material, said cushion back, and between said material and said cushion back.

150. A flooring, floor covering, carpet, carpet tile, or the like comprising: a low face weight  
5 material, an intermediate layer, and a cushion back.

151. The flooring as recited in claim 150, having good seamability.

152. The flooring as recited in claim 150, having a patterned monolithic design.  
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153. The flooring as recited in claim 150, having a uniformity of appearance between tiles.

154. The flooring as recited in claim 150, having a constant shade on tiles from the same dye  
lot.  
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155. The flooring as recited in claim 150, having at least one of durability, low crush, short  
pile, dense surface, and combinations thereof.

156. A method of marketing carpet to carpet customers, comprising the steps of offering to the  
20 customer at least one of each of standard cushion back carpet tile, low weight cushion  
back carpet tile and hardback carpet tile to satisfy all of their carpet needs and thereby  
replace broadloom carpet.

157. A method of marketing carpet tile as a replacement for broadloom, comprising the steps of offering low weight cushion back carpet tile for sale at the same price as installed cost broadloom.

5 158. A substrate for jet dyeing pattern carpet, comprising:  
a low weight pile material adapted to be jet dyed,  
and a low weight cushion backing.

10 159. The substrate of claim 158, further comprising an adhesive layer between said pile material and said cushion backing.

160. The substrate of claim 159, further comprising a reinforcement material in or between at least one of said pile material, adhesive layer, and cushion backing.

15 161. The substrate of claim 158, wherein said pile material is heat set after dyeing.